ECR-1101. Del.

Issued Sept. 14, 1946

DELAWARE HANDBOOK

OR

CONSERVATION PRACTICES

1947

UNITED STATES DEPARTMENT OF AGRICULTURE
PRODUCTION AND MARKETING ADMINISTRATION
FIELD SERVICE BRANCH

DELAWARE STATE COMMITTEE

Clarence E. Ocheltree, Chairman
Ernest S. Mattiford
Vincent L. Mayer

Dean George L. Schuster, Director
Extension Service

DELAWARE STATE TECHNICAL COMMITTEE

E. P. Brasher, Extension Horticulturist
Paul M. Hodgson, Bureau of Markets
E. S. Mattiford, Field Service Branch
V. L. Mayer, Field Service Branch
W. T. Mifflin, State Board of Agriculture
C. E. Ocheltree, Field Service Branch
Lyle Moles, Vocational Agriculture

Dean George L. Schuster, Extension Service
Richard Snyder, Soil Conservation Service
W. S. Taber, State Forester
Don P. Wilson, Bureau of Agriculture Economics

DELAWARE HANDBOOK OF CONSERVATION PRACTICES--1947

The 1947 Agricultural Conservation Program offers assistance to Delaware farmers to restore and conserve the fertility of the soil through the use of conservation practices. The program year begins January 1, 1947, and ends December 31, 1947.

In order to encourage the performance of practices which are needed most, the county committee may select from the list of approved practices those which will be applicable to farms in the county.

Each farmer should confer with his county or community committeeman to plan how the Program can be of greatest assistance in obtaining the maximum conservation on his farm.

CONSERVATION MATERIALS AND SERVICES

Liming materials, superphosphate, and other designated conservation materials and services may be furnished by the Field Service Branch, Production and Marketing Administration, in lieu of cash payments. The Government will pay part of the cost of the material or service and the farmer will pay part.

PRACTICES AND PAYMENTS

Each State will receive its share of the funds appropriated for 1947 payments to producers who carry out approved conservation practices. The State committee will establish a limit on expenditures for each county. The county committee will determine for each farm, on the basis of conservation needs and farmer's intentions, the extent of assistance that will be made available to each farm for carrying out approved practices. The sum of the amounts approved for all farms in the county may not exceed the limit approved by the State committee. Payments under this program are subject to the appropriation hereafter provided for this purpose by the Congress.

To qualify for payment, each practice must be performed in accordance with approved specifications for the practice and must be in keeping with good farming methods for the locality. The county committee will require evidence (bills, receipts, seed tags, etc.) to be submitted by the farmer in support of reports of practices carried out with materials or seeds, excluding conservation materials furnished by the Field Service Branch, Production and Marketing Administration.

APPLICATION OF MATERIALS

1. Liming Materials.--Applying liming materials to farmland:

Credit rate: Not more than 70 percent of the average cost of standard bulk limestone delivered at farms. County rates for liming materials will be shown in a supplement to this handbook.

Specifications: Standard ground limestone shall contain calcium and magnesium carbonates equivalent to not less than 90 percent calcium carbonate and must be fine enough than 100 percent shall pass through a 10-mesh sieve. Ground limestone not meeting the above specifications will be considered as limestone screenings. The application of liming materials contained in commercial fertilizers will not qualify for payment under this practice.

2. Phosphate. - Applying phosphate materials other than rock phosphate to eligible crops.

Credit rate: 4 cents per pound of available P_2O_5. This rate is equivalent to 80 cents per 100 pounds of 20 percent superphosphate, or 72 cents per 100 pounds of 18 percent superphosphate.

Specifications: Phosphate materials may be applied only to:

(a) Permanent pasture;
(b) The following legumes and grasses seeded alone in the fall of 1946 or during the 1947 program year: perennial or biennial legumes, perennial grasses, or annual lespedeza;
(c) The same crops included under (b) above seeded with a small grain nurse crop in the fall of 1946 or in the spring of 1947, if applied after the small grain is harvested, or, if not harvested, after June 30, 1947, or
(d) Winter legumes or ryegrass seeded after June 30, 1947, with or without a nurse crop.

3. Potash. - Applying potash materials to eligible crops.

Credit rate: $2\frac{1}{2}$ cents per pound of available K_2O. This rate is equivalent to $1.50 per 100 pounds of 60 percent muriate of potash.

Specifications: Potash must be applied in accordance with the specisications for phosphate materials under practice 2.

COVER CROPS

4. Winter cover crops. - Establishing a winter cover crop in the fall of 1947 from seedings of crimson clover, hairy vetch, or annual ryegrass or mixtures consisting solely of these crops.--$1.50 per acre.

Specifications: The seeding must be performed in accordance with good farming practice, which shall include: A well prepared seedbed; a full seeding of adapted seed; inoculation for legume crops unless a recent crop of the same legume or another requiring the same inoculant has been grown on the land seeded; and the application of liming material, phosphate, or potash where necessary to insure a good stand and good growth.

Credit will be allowed for a full seeding of one or more of these crops with a small grain nurse crop. Ryegrass is limited to cropland and orchards. No credit will be allowed under this practice for any acreage on which the county committee determines that a good stand and good growth was not obtained. The following seeding rates per acre are recommended by the Delaware Agricultural Experiment Station:

Crimson clover: 20 to 25 pounds per acre broadcast where the land is well inoculated; 30 pounds per acre where crimson clover has not been grown recently. One third more seed should be used when they are sown in the hull.

Hairy vetch: 20 to 25 pounds per acre broadcast where the land is well inoculated; 25 to 30 pounds per acre where vetch has not been grown recently.

Ryegrass: 20 pounds per acre.

5. Small grains.--Establishing a satisfactory winter cover from seedings of rye, oats, barley, wheat, or mixtures of these crops, made in the fall of 1946--$1.50 per acre.

Specifications: A satisfactory cover will be considered to have been established when the land is uniformly covered with a growth from which a reasonable tonnage of forage could be harvested. The crop must not be harvested for grain or cut for hay. Recommendations of the Delaware Agricultural Experiment Station should be followed with respect to seedbed preparation, seeding rates per acre, and planting dates. Seed should be sown sufficiently early to permit plants to withstand winter freezes.

6. Soybeans alone. Establishing a summer cover crop from seedings of soybeans from which seed is not harvested--$1.50 per acre.

Specifications: The land should be uniformly covered with a growth from which a reasonable tonnage of forage could be obtained if harvested. The forage must be turned and followed by a fall-sown crop, or left on the land during the following winter.

PASTURE

7. Permanent pasture.--Establishing a permanent pasture--$5.00 per acre.

Specifications: A satisfactory stand of adapted pasture perennial grasses, perennial legumes, or a combination of such grasses and legumes must be established. The seedbed must be firm before the seeds are sown. Liming and fertilizer materials, where necessary to insure a good stand and good growth, should be applied at or before the time of seeding.

To establish a good stand, the following seeding rates per acre are recommended: At least 20 pounds per acre of an adapted permanent pasture mixture must be sown on land properly prepared. The pasture mixture must contain at least 3 pounds of a mixture of two or more of the following--

Alsike clover	White clover	Ladino clover; and

at least 5 pounds of a mixture of two or more of the following--

Orchard grass	Brome grass	Tall fescue
Meadow fescue	Perennial ryegrass	Reed canary grass

OTHER PRACTICES

8. Open ditch drainage--Constructing or enlarging drainage ditches--8 cents per cubic yard of dirt removed.

Specifications: The ditches must be laid out by or under the supervision of a qualified person approved by the county committee and when completed must meet detailed specifications approved by the State Committee. Payment will not be made with respect to the dirt removed from any ditch unless adequate provision is made for the entrance of water into and out of the ditch. No. payment will be made for cleaning out existing ditches.

9. Harvesting seeds.--Harvesting seed from a good stand of crimson clover, hairy vetch, red clover, or alsike clover--$3.50 per acre, not to exceed 10 acres per farm.

Specifications: The yield of seed obtained must be reasonable for the community.

10. Local Conservation Practice.--The county committee may select with the prior approval of the State Committee, one practice of a local nature not included in the State Handbook which has a definite soil or water conservation value and will meet special needs in the county. Any practice selected hereunder must be carried out under specifications approved by the State Committee.

Credit rate: The rate recommended by the county committee and approved by the State Committee. The rate should not exceed that percentage of the cost specified as the maximum for practices of a similar type included in the handbook. (Not more than 10 percent of the county's original allocation of funds plus 10 percent of any supplemental allocations of funds may be used for this practice.)

ECR-1101-Md. Issued Sept. 19, 1946

MARYLAND HANDBOOK

OF

CONSERVATION PRACTICES

1947

During the past few years an outstanding job of agricultural production has been done at the expense of our soil. Maryland farmers went all out to produce their share of the crops and livestock products needed during the war. For this reason proper conservation and efficient land utilization has, through necessity, been retarded.

We must continue to produce what is needed but keep conservation of our soil and water resources uppermost in our operations.

The 1947 Agricultural Conservation Program for Maryland will assist farmers in carrying out a sufficient volume of those practices which will rebuild and conserve the State's most valuable resource--its native soil.

The practices included in the 1947 Program are based upon combined recommendations of community, county and State Committeemen of the Production and Marketing Administration; representatives of other agricultural agencies, and other farm leaders.

MARYLAND STATE PMA COMMITTEE

Joseph H. Blandford, Chairman
Leonard C. Burns
Fred B. Sylvester
Dr. T. B. Symons, Director, Extension Service

MARYLAND STATE TECHNICAL COMMITTEE

H. M. Brewer, Crop Reporting Service
L. C. Burns, Field Service Branch
E. M. Davis, Soil Conservation Service
Dr. S. H. Devault, Agricultural Economics
E. F. Holter, Master, Maryland State Grange
J. S. Kaylor, State Forester
Dr. W. B. Kemp, Experiment Station
J. W. Magruder, Agronomy
H. S. Leaverton, President, Maryland State Farm Bureau
Dr. T. B. Symons, Extension Service
Dr. R. P. Thomas, Soils

UNITED STATES DEPARTMENT OF AGRICULTURE
PRODUCTION AND MARKETING ADMINISTRATION
Field Service Branch

MARYLAND HANDBOOK OF CONSERVATION PRACTICES--1947

The 1947 Agricultural Conservation Program offers assistance to Maryland farmers to restore and conserve the fertility of the soil through the use of conservation practices.

In order to encourage the performance of practices which are needed most, the county committee may select from the list of approved practices those which will be applicable to farms in the county.

Each farmer should confer with his county or community committeeman to plan how the Program can be of greatest assistance in obtaining the maximum conservation on his farm.

The 1947 Program year begins January 1, 1947, and ends December 31, 1947.

CONSERVATION MATERIALS AND SERVICES

Liming materials, superphosphate, and other designated conservation materials and services may be furnished by the Field Service Branch, Production and Marketing Administration, in lieu of cash payments. The Government will pay part of the cost of the material or service, and the farmer will pay part.

PRACTICES AND PAYMENTS

Each State will receive its share of the funds appropriated for 1947 payments to producers who carry out approved conservation practices. The State committee will establish a limit on expenditures for each county. The county committee will determine for each farm, on the basis of conservation needs and farmer's intentions, the extent of assistance that will be made available to each farm for carrying out approved practices. The sum of the amounts approved for all farms in the county may not exceed the limit approved by the State committee. Payments under this program are subject to the appropriation hereafter provided for this purpose by the Congress.

To qualify for payment, each practice must be performed in accordance with approved specifications for the practice and must be in keeping with good farming methods for the locality. The county committee will require evidence (bills, receipts, seed tags, etc.) to be submitted by the farmer in support of reports of practices carried out with materials or seeds, excluding conservation materials furnished by the Field Service Branch, Production and Marketing Administration.

APPLICATION OF MATERIALS

1. Liming materials. Applying liming material to farmland.

Credit rate: Not more than 70 percent of average cost of bulk standard ground limestone delivered at farm. The rate for other liming material may not exceed 70 percent of average cost or the rate for an equivalent amount of bulk standard ground limestone, whichever is lower. County rates for liming material will be contained in a supplement to this handbook.

Specifications: Ground limestone must have a calcium carbonate equivalent of at least 90 percent and must be fine enough that 100 percent will pass a 10-mesh sieve; hydrated lime must have a calcium carbonate equivalent of at least 120 percent; burned lime must have a calcium carbonate equivalent of at least 145 percent. Ground limestone not meeting the specifications above will be considered as limestone screenings. The application of liming materials contained in commercial fertilizers will not qualify for credit under this practice.

No credit will be allowed for the application of liming material to farmland which the county committee determines was not protected against erosion during the winter following the application of material. Land left in sod (including also the forage of soybeans) or planted to a fall-sown crop or (in counties designated by the State Committee) land which is fall-plowed will be considered as protected against erosion during the winter.

2. Phosphate. Applying phosphate materials other than rock phosphate to eligible crops.

Credit rate: 4 cents per pound of available P_2O_5. This rate is equivalent to 80 cents per 100 pounds of 20 percent superphosphate.

Specifications: Phosphate materials may be applied only to:

(a) Permanent pasture;
(b) Established hay crops
(c) New seedings of grasses and legumes (except soybeans or cowpeas) without a small grain nurse crop;
(d) Grasses and legumes seeded in the fall of 1946 or spring of 1947 with a small grain nurse crop, if applied after the small grain crop is harvested, or, if not harvested, after June 30, 1947;
(e) Crimson clover, vetch, or ryegrass seeded after July 1, 1947, with or without a small grain nurse crop;
(f) Cover crops in orchards.

3. Potash. Applying potash materials to eligible crops.

Credit rate: $2\frac{1}{2}$ cents per pound of available K_2O. This rate is equivalent to $1.25 per 100 pounds of 50 percent muriate of potash.

Specifications: Same as for phosphate under practice 2 above.

COVER CROPS

4. Winter cover crops. Establishing a winter cover crop in the fall of 1947 from seedings of crimson clover, hairy vetch, annual ryegrass, a mixture consisting solely of these crops, or a full seeding of one or more of these crops with a small grain nurse crop.

Credit rate: Payment will be made on the pounds of seed (cleaned seed equivalent) at the following rates:

a. Crimson clover--19 cents per pound
b. Hairy vetch --16 cents per pound
c. Annual ryegrass-11 cents per pound

Specifications: The seeding must be performed in accordance with good farming practices, which shall include: a well-prepared seedbed; a full seeding of adapted seed; inoculation for legume crops unless a recent crop of the same legume or another requiring the same inoculant has been grown on the land seeded; and the application of liming material, phosphate, or potash where necessary to insure a good stand and good growth.

Ryegrass is limited to cropland and orchards. No credit will be allowed under this practice for any acreage on which the county committee determines that a good stand and good growth were not obtained. The following are seeding rates per acre and dates of seeding recommended by the Maryland State Experiment Station and Extension Service:

Cover crop	Seeding rates per acre (pounds)		Planting dates	
	Alone	With small grain	Southern area	Northern area
Crimson clover.....	15-25	10-15	July 1-Sept. 15	---
Hairy vetch.....	30-40	12-25	July 1-Oct. 15	July 1-Sept.15
Annual ryegrass.....	20-35	10-15	July 1-Oct. 1	July 1-Aug. 15

5. Small grains. Establishing a satisfactory winter cover crop from seedings of barley, rye, wheat, or mixtures of these crops, seeded in the fall of 1946. This practice is applicable only to the counties of Anne Arundel, Calvert, Caroline, Charles, Dorchester, Prince George's, St. Mary's, Somerset, Wicomico, and Worcester.

Credit rate: $1.50 per acre.

Specifications: A satisfactory cover will be considered to have been established when the land is uniformly covered with a growth from which a reasonable tonnage of forage could be harvested. The seedbed should be well prepared, fertilizer materials applied where needed, and seed sown sufficiently early to permit plants to withstand winter freezes. The crop must not be harvested for grain or cut for hay. In the counties of Caroline, Dorchester, Somerset,

Wicomico, and Worcester payment will only be made for turning the crop under as green manure. The following seeding rates per acre and dates of seeding are recommenced by the Maryland Experiment Station and Extension Service:

Crop	Seeding rates per acre (bushels)	Planting dates	
		Southern Maryland	Lower Eastern Shore
Barley	2	Sept. 12 - Oct. 16	Sept. 20 - Oct. 19
Rye	$1\frac{1}{4}$ - 1 3/4	Sept. 19 - Nov. 9	Sept. 21 - Nov. 14
Wheat	$1\frac{1}{2}$ - 1 3/4	Sept. 18 - Oct. 15	Sept. 26 - Oct. 28

6. Summer legumes alone. Establishing a summer cover crop from seedings of soybeans from which seed is not harvested, or cowpeas.

Credit rate: $2.50 per acre.

Specifications: The land should be uniformly covered with a growth from which a reasonable tonnage of forage could be obtained if harvested. The forage must be turned and followed by a fall-sown crop, or left on the land during the following winter.

7. Sweet clover: Disking or plowing under a good stand and good growth of sweet clover.

Credit rate: $1.50 per acre.

Specifications: A vegetative growth, from which a reasonable tonnage of forage could be obtained if harvested, must be disked or plowed under. If turned in the fall, the land must be seeded to a fall-sown crop.

8. Red clover or alsike clover. Disking or plowing under a good stand and good growth of red clover or alsike clover. This practice is applicable only to the counties of Somerset, Wicomico, and Worcester.

Credit rate: $1.50 per acre.

Specifications: A good stand and vegetative growth, from which a reasonable tonnage of forage could be obtained if harvested, must be disked or plowed under. The crop must not be grazed or cut for hay. If turned in the fall, the land must be seeded to a fall-sown crop.

9. Annual lespedeza. Establishing a good stand and good growth of annual lespedeza. This practice is applicable only to the counties of Anne Arundel, Calvert, Caroline, Charles, Dorchester, Kent, Prince George's, Queen Anne's, St. Mary's, Somerset, Talbot, Wicomico, and Worcester.

Credit rate: $1.50 per acre.

Specifications: A satisfactory growth of annual lespedeza seeded in the spring of 1947 must be turned and followed by a fall-sown crop of left on the land during the winter. Payment will not be allowed if the lespedeza is grazed, cut for hay, or harvested for seed.

PASTURE

10. Permanent Pasture. Establishing a permanent pasture.

Credit rate: $6.00 per acre.

Specifications: Approval by the county committee of the kind and amount of seed and the amount of lime and fertilizer to be used must be obtained before performing this practice. A satisfactory stand of adapted pasture perennial grasses, perennial legumes or a combination of such grasses and legumes, must be established. Liming and fertilizer materials, where necessary to insure a good stand and good growth, should be applied at or before the time of seeding. The most widely adapted permanent pasture legumes and grasses are listed below. To establish a good stand, the following minimum seeding rates per acre are recommended by the Maryland State Experiment Station and Extension Service and will be the minimum seedings required to qualify under this practice:

Kind of seed	Fertile loam, silt loam, satisfactory drainage (pounds)		Moderate to low fertility, satisfactory drainage (pounds)	Poorly drained soil, not too swampy (pounds)
	No. 1 or No. 2		No. 3	No. 4
Red clover 1/.....	5	4	5	-
Alsike.....	-	3	-	4
Ladino.....	1	1	1	1
Annual lespedeza 2/.	-	7	5	-
Kentucky bluegrass..	4	-	3	4
Orchard grass 3/....	-	7	4	-
Timothy.....	8	-	4	-
Red top.....	-	-	3	4
Colonial bent grass.	-	-	-	2

1/ Alfalfa may be substituted pound for pound on fertile well limed soil.

2/ Annual lespedeza should not be used in areas where it is not adapted because of short growing season. In such areas one-half pound of Ladino clover should be substituted for the whole amount of lespedeza shown.

3/ Bromegrass (Southern strain) may be substituted on fertile soils high in nitrogen and in connection with a vigorously growing legume.

DRAINAGE

11. Open ditch drainage. Constructing or enlarging drainage ditches on farmland.

Credit rate: 10 cents per cubic yard of dirt removed.

Specifications: Approval by the county committee must be obtained before carrying out this practice. The ditches must be laid out and constructed under

the supervision of a qualified person approved by the county committee and, when completed, must meet detailed specifications approved by the State committee.

The ditches are to be located where they will best serve the purpose of providing adequate drainage. The sides of the ditches should be sloped where practicable. V-shaped ditches are recommended. Payment will not be made with respect to the dirt removed from any ditch unless adequate provision is made for the entrance of the water into and out of the ditch. No credit will be allowed for cleaning out a ditch.

12. Tile drainage. Installing field drainage tile on farmland.

Credit rate: 7 cents per linear foot of tile.

Specifications: Approval by the county committee must be obtained before carrying out this practice. The drainage system must be laid out and constructed under the supervision of a qualified person approved by the county committee and, when completed, must meet detailed specifications approved by the State committee. No payment will be made where the size of the tile is less than four inches in diameter. This practice is applicable only to farmland suitable to cultivated crops, pasture, or improved meadows.

EROSION CONTROL

13. Contour stripcropping. Establishing on the contour alternate strips of row crops and sown, close drilled, or sod crops.

Credit rate: $2.50 per acre.

Specifications: The strips shall be on the contour following properly laid out terraces or guide lines established by or under the supervision of a qualified person approved by the county committee. Payment will be allowed only for the acreage on which the strips are first established in 1947. No credit for this practice will be given where two or more adjacent strips are planted to cultivated row crops the same year. At least 25% of the area in strips must be in grass.

14. Contour row crops. Contour farming of cultivated row crops.

Credit rate: $1.50 per acre.

Specifications: The planting and cultivation of the crop must be performed on the contour following properly laid out terraces or guide lines established on the contour by or under the supervision of a qualified person approved by the county committee.

Any acreage of row crops planted or cultivated on the contour or in connection with stripcropping established prior to the 1947 program year will qualify for payment under this practice, provided the strips are properly maintained and no two or more adjacent strips are planted to cultivated row crops the same year. Any acreage of row crops farmed on the contour in connection with contour stripcropping established during the program year will not qualify for payment under this practice.

15. Contour drilled crops. Contour farming of drilled or close sown crops.

Credit rate: 75 cents per acre.

Specifications: Same as for contour row crops under practice number 14, except that all operations incident to preparing the land and growing the crops must be performed on the contour.

16. Contour furrowing. Contour furrowing of non-crop pasture land.

Credit rate: 25 cents per 1,000 linear feet.

Specifications: The contour furrowing must be laid out by or under the supervision of a qualified person approved by the county committee. The furrow must have a minimum depth of 5 inches from the bottom or sole of the furrow to the top or crown of the furrow slice and must follow within one-half percent of the true contour.

17. Terraces. Construction of terraces or diversion ditches for collecting or spreading of water.

Credit rate: 10 cents per cubic yard of dirt removed.

Specifications: Approval by the county committee must be obtained before carrying out this practice. The terraces must be laid out by or under the supervision of a qualified person approved by the county committee and must be completed in accordance with detailed specifications approved by the State Committee. The terraces must empty into an outlet adequately protected against washing. The terraces shall be protected by vegetation where there is possibility of silting.

FORESTRY PRACTICES

18. Forest tree planting. Planting approved species of forest trees.

Credit rate: $7.50 per acre.

Specifications: The planting including selection of species, spacing of the trees, and time of planting, should be performed by or under the supervision of a qualified person approved by the county committee and must be completed in accordance with detailed specifications approved by the State committee. Planting must be protected from fire and grazing and cultivated sufficiently to retard native growth of weeds and undesirable species. Plantings must show a survival of at least 700 trees per acre. Payment will be made only for forest trees planted in 1947.

19. Improving stands. Thinning or pruning stands and removing undesirable trees.

Credit rate: $5.00 per acre.

Specifications: The forest stand improvement must be carried out during 1947 under the supervision of a State Forester who must certify the proper completion of the practice. Areas being improved must be protected from fire and grazing.

20. Firebreaks. Construction of firebreaks for protection of farm woodland.

Credit rate: $7.50 per 1,000 linear feet.

Specifications: The firebreaks must be laid out under the supervision of a qualified person approved by the county committee. The width of the firebreaks must be at least 15 feet to qualify for full credit under this practice, however, in localities where the Forest Service recommends a width less than 15 feet the credit rate may be reduced proportionately. No payment will be made if any part of the area burns during the year 1947 due to fire originating on the owner's property. Payment will be made only for firebreaks constructed in 1947.

MISCELLANEOUS PRACTICE

21. Local Conservation Practice.

The county committee may select, with approval of the State committee, one practice of a local nature not otherwise included in this handbook. Any practice selected hereunder must be carried out under specifications and at the rate recommended by the county committee and approved by the State committee. The rate should not exceed the maximum rate established for a similar type of practice. Not more than 10 percent of the county's original allocation of funds plus 10 percent of any supplemental allocation may be used under this practice. The practice must have a definite soil or water conservation value, must meet special needs in the county, must be backed by experimental evidence to support the value of the practice, and must be a practice for which performance can be checked in a practical manner.

ECR-1101-KENTUCKY

Issued September 30, 1946

Kentucky Handbook of Conservation Practices 1947

UNITED STATES DEPARTMENT OF AGRICULTURE
PRODUCTION AND MARKETING ADMINISTRATION
FIELD SERVICE BRANCH

FOREWORD

In the past several years a magnificent job of production has been done. Proper conservation of our soil and water resources has, through necessity, been somewhat delayed.

Now it is time to produce what is needed, yet keep conservation of our soil and water resources uppermost in our operations.

The 1947 Agricultural Conservation Program for Kentucky is planned to help farmers in carrying a sufficient volume of those practices which will rebuild and conserve the State's most valuable resource—its native soil.

The practices included in the 1947 program are based on combined recommendations of community, county, and State committeemen of the Production and Marketing Administration, representatives of other agricultural agencies, and other farm leaders.

KENTUCKY STATE PMA COMMITTEE

M. D. Royse
M. C. Butler
H. B. Popplewell
R. O. Wilson
T. P. Cooper,
Director, Extension Service

KENTUCKY STATE TECHNICAL COMMITTEE

Watson Armstrong,
Vocational Education
H. K. Gayle,
Soil Conservation Service
E. J. Kinney,
Extension Service
Earl Mayhew,
Farm Security Administration
Fred T. McFee,
Tennessee Valley Authority
Elliot Robertson,
State Commissioner of Agriculture

KENTUCKY HANDBOOK OF CONSERVATION PRACTICES

Soil Conservation Under the Kentucky System of Grass Farming

HOW THE PROGRAM WORKS

The 1947 Agricultural Conservation Program for Kentucky offers assistance to each farmer in the State to restore and conserve the fertility of his soil through the use of conservation practices.

All farmers who carry out approved practices on their farms during the program year will be eligible to receive soil conservation payments. Conservation materials furnished by the Field Service Branch, Production and Marketing Administration, may be accepted in lieu of payments. Payments under this program are subject to the appropriation hereafter provided for this purpose by the Congress.

Each farmer should confer with his county or community committeeman to plan how the program can be of greatest assistance in obtaining maximum conservation on his farm.

The 1947 program year begins January 1, 1947, and ends December 31, 1947.

Section A. FARM PRACTICE ALLOWANCE

A farm allowance will be determined for each farm in the State. Amounts earned within the farm allowance will be paid in full. The extent of approved practices carried out on the farm in excess of the farm allowance will be paid at the approved rate on a pro-rata basis to the extent of the unobligated portion of the funds allocated to the State.

The farm allowance for each farm will be the sum of the following items:

ITEM 1.—60 cents times the acreage of cropland on the farm. Cropland means farm land which in 1946 was tilled or was in regular rotation, including any land in planted or cultivated fruit trees, nut trees, vineyards, or bush fruits.

ITEM 2.—35 cents times the acreage of fenced, noncrop, open pasture land on the farm in excess of one-half of the acreage of cropland. Noncrop, open pasture land means pasture land (other than rotation pasture land) on which the predominant growth is forage suitable for grazing and on which the number or grouping of any trees or shrubs is such that the land could not be considered as woodland and is capable of maintaining during the normal pasture season at least one animal unit for each 5 acres. Animal unit means 1 cow, 1 horse, 5 sheep, 5 goats, 2 calves, or 2 colts, or the equivalent thereof.

Section B. PRACTICES AND PAYMENTS

To qualify for payment, each practice is to be performed in accordance with approved specifications for the practice and is to be in keeping with good farming methods for the locality. The county committee will require evidence (bills, receipts, seed tags, etc.) to be submitted by the farmer in support of reports of practices carried out

718965—46——1

with materials or seeds, excluding conservation materials furnished by the Field Service Branch, Production and Marketing Administration.

The small payment increase on an amount equivalent to the credit value of properly used conservation materials and services may be advanced as a credit against that part of the cost required to be paid by the producer.

1. **Liming materials.**—Applying standard ground limestone, or equivalent material, to farm land.

Credit rate.—Not more than 70 percent of the average cost delivered to farms in the county. The rate for other liming material may not exceed 70 percent of the average cost or the rate for an equivalent amount of bulk standard ground limestone, whichever is lower. County rates for liming materials will be shown in a supplement to this handbook.

Kentucky farmers have learned the value of applying liming materials to their farm land.

Specifications.—Standard ground limestone shall contain calcium and magnesium carbonates equivalent to not less than 80 percent calcium carbonate and must be fine enough so that not less than 80 percent shall pass through a 10-mesh sieve, provided that either the calcium carbonate equivalent or the proportion of material passing through a 10-mesh sieve, or both, be sufficiently greater than 80 percent so that the product of the multiplication of calcium carbonate equivalent by the percent of material passing through a 10-mesh sieve shall be not less than 0.72. All the finer particles obtained in the production process shall be included. Ground limestone not meeting the above specifications will be considered as limestone screenings.

For the purpose of this practice, each of the following will be considered to be equivalent to one ton of standard ground limestone:

1,400 pounds of burned or hydrated lime.

2,000 pounds of agricultural granulated slag meeting the chemical and mechanical specifications for standard ground limestone.

2,000 pounds of calcium silicate slag meeting the chemical and mechanical specifications for standard ground limestone.
3,000 pounds of ground limestone screenings.
3,000 pounds of agricultural marl having a calcium carbonate equivalent of not less than 55 percent calcium carbonate.

The application of liming materials contained in commercial fertilizers will not qualify for payment under this practice.

2. **Phosphate.**—Applying phosphate materials, other than rock or colloidal phosphate, to eligible crops.

Credit rates:

a. Normal superphosphate, including phosphate in mixed fertilizers (not more than 25 percent available P_2O_5), **4.8 cents per pound** of available P_2O_5. This rate is equivalent to $0.96 per 100 pounds of 20-percent superphosphate. For purposes of payment, 200 pounds of basic slag will be considered equivalent to 100 pounds of 20-percent superphosphate.

b. Concentrated superphosphate (more than 25 percent available P_2O_5), **4 cents per pound** of available P_2O_5. This rate is equivalent to $1.88 per 100 pounds of 47-percent superphosphate.

Specifications.—Phosphate materials (except rock or colloidal phosphate) may be applied only to:

a. Permanent pasture;
b. New seedings of grasses and legumes;
c. Winter cover crops (other than small grains alone);
d. Hay crops;
e. Cover crops in orchards;
f. Manure in stables.

3. **Rock phosphate.**—Applying rock or colloidal phosphate to farmland.

Credit rate:

a. Rock phosphate ..... **$9.00 per ton**
b. Colloidal phosphate ..... **$7.00 per ton**

Specifications.—Rock phosphate containing at least 28 percent of P_2O_5 or colloidal phosphate containing at least 20 percent of P_2O_5 must be applied in accordance with good farming methods.

4. **Potash.**—Applying potash to eligible crops.

Credit rate.—3.6 cents per pound of available K_2O. This rate is equivalent to $1 80 per 100 pounds of 50-percent muriate of potash.

Specifications.—To qualify for payment, potash must be applied in accordance with the specifications for phosphate materials under practice 2 above, except on manure in stables.

COVER AND GREEN MANURE CROPS

5. **Winter cover crops.**—Establishing a winter cover of crimson clover, hairy vetch, annual ryegrass, or a mixture consisting solely of these crops from seedings made in the fall of 1947.

Credit rate.—Payment will be made at the following rates:

a. Crimson clover ..... **17 cents per pound**
b. Hairy vetch ..... **16 cents per pound**
c. Annual ryegrass ..... **9 cents per pound**

Specifications.—The seeding to be performed in accordance with good farming practice, which shall include: A well-prepared seedbed; a full seeding of adapted seed; inoculation for legume crops, unless a recent crop of the same legume, or another requiring the same inoculant, has been grown on the land seeded; and the application of liming material, phosphate, or potash where necessary to insure a good stand and growth.

Credit will be allowed for a full seeding of one or more of these crops with a small grain nurse crop. Ryegrass is limited to cropland and orchards. No credit will be allowed under this practice for any acreage on which the county committee determines that a good stand and growth was not obtained.

Seeding rates per acre and dates of seeding recommended by the Kentucky Agricultural Experiment Station

Winter cover crop	Recommended seeding rates (pounds)		Recommended planting dates			
			Alone on prepared seedbed		With small grain	
	Alone	With small grain	North, central, mountains, and bluegrass	South and west	North, central, mountains, and bluegrass	South and west
Annual ryegrass	15–20	10	August	August to early September.	August	August to early September.
Crimson clover	15–20	10–12	do	August	Aug. 1 to Sept. 10	Aug. 15 to Sept. 20.
Hairy vetch [1]	25–30	15–20	Aug. 15 to Sept. 15	Aug. 15 to Sept. 25	Aug. 20 to Sept. 20	September.

[1] When a vetch and small grain mixture is to be harvested for seed, a seeding of 12 to 15 pounds of vetch is recommended.

6. **Small grains.**—Establishing winter cover from seedings of wheat, oats, barley, rye, or mixtures of these crops made in the fall of 1946.

Credit rates—

a. Wheat, rye, or mixtures of wheat and rye ..... **$2.50 per acre**
b. Barley, or mixtures of barley, wheat, or rye ..... **$2.00 per acre**
c. Oats, or mixtures of oats, barley, wheat, or rye ..... **$1.50 per acre**

Specifications.—To qualify for payment a protective winter cover must be provided and the crop may not be harvested for hay or grain. The seedbed should be well prepared and seed sown sufficiently early to permit plants to withstand winter freezes.

7. **Annual lespedeza.**—Establishing a good stand and a good growth of annual lespedeza—**$1.50 per acre.**

Specifications.—To qualify for payment, a satisfactory growth of lespedeza seeded in the spring of 1947, to be turned or disced as green manure and followed by a fall-sown crop or left on the land during the winter. Payment will not be allowed if the lespedeza is grazed, cut for hay, or if a seed crop is harvested.

8. **Sweetclover.**—Discing or plowing under a satisfactory growth of sweetclover—**$1.50 per acre.**

Specifications.—To qualify for payment, a good stand must be obtained and a vegetative growth, from which a reasonable tonnage of forage could be obtained if harvested, must be disced or plowed under in the spring of 1947.

9. **Pasture development.**—Establishing or improving a permanent pasture by seeding adapted grasses and legumes.

Credit rate.—Payment will be made at the following rates:

	Per pound		*Per pound*
a. Kentucky bluegrass	$0.68	*g.* Alsike clover	$0.32
b. Orchard grass	.15	*h.* Alfalfa	.38
c. Redtop	.15	*i.* Sweetclover (scarified)	.16
d. Timothy	.08	*j.* Sweetclover (unscarified)	.12
e. Kentucky 31 fescue	.40	*k.* Annual lespedeza	.08
f. Red clover	.36	*l.* Ladino clover	1.20

Specifications.—In establishing a pasture, a mixture containing at least one grass and one legume listed above must be sown on a properly prepared seedbed to qualify for payment. In pasture improvement to qualify for payment, either a grass or legume listed above, or both, must be sown in a workmanlike manner so as to have at least one perennial grass and at least one legume in the improved pasture. Liming and fertilizing materials should be applied at or before seeding when necessary to insure a good stand and growth.

10. **Stockwater development.**—Excavating ponds or constructing water-impounding dams for providing adequate supplies of water for livestock, (*a*) **10 cents per cubic yard** of earth moved; (*b*) concrete—**$9 per cubic yard;** (*c*) rubble masonry—**$6 per cubic yard,** not to exceed $300 per development.

Specifications.—Ponds or dams to be constructed in accordance with the detailed specifications under the general supervision of a qualified person recommended by the county committee and approved by the State committee. The maximum surface area of a pond must not exceed 1,000 square feet, at high-water mark, for each one-half acre of drainage area. Adequate spillways must be provided. This practice will not be approved on permanently running streams.

a. Selection of site.—Location should be where drainage from barns and stock lots will not reach the pond. Areas with sinkholes, gravel beds, or outcropping layers of rock are unsatisfactory. Choose site where an open spillway can be easily constructed.

b. Construction.—(1) All trees and other vegetable matter should be removed from the entire area to be covered by the dam. (2) A core trench filled with impervious material should extend into the subsoil. (3) Earth fills should be

thoroughly packed during construction. Add 10 percent to height at center to allow for settling. (4) Spillway to be adequate to remove the maximum run-off experienced during the heaviest rains. Calculate size according to Kentucky Extension Circular 317. **Do not guess.** (5) Spillway to be protected from erosion by masonry or vegetation, as required by slope and expected volume and velocity of water. (6) The pond should be protected from deposits of silt by a silt or settling basin or by an unbroken strip of sod to be maintained above the high-water mark of the reservoir and not less than 100 feet in width at any point.

c. Minimum acceptable dimensions for stock pond.—(1) Drainage area above pond to be not less than 1 acre. (2) Minimum surface area, 2,000 square feet at high-water mark. (3) Minimum depth at deepest point, 6 feet below bottom

Contour farming of row crops, such as corn, conserves moisture, etc.

of spillway. (4) Minimum depth of three-fourths of area, 4½ feet. (5) Slopes 3 to 1 on the upper (wet) side. (6) Slopes 2 to 1 on the lower (dry) side. (7) Minimum top width of fill to be 6 feet. (8) Top of dam should be at least 1½ feet above high-water level in the spillway.

EROSION AND WATER CONTROL PRACTICES

11. **Contouring crops.**—Contour farming of crops on land having 2-percent and not more than 20-percent slope—**$2 per acre.**

Specifications.—The cultural operations incident to preparing the seedbed and planting and cultivating the crop must be carried out on the contour, following guide lines established by, or under the general supervision of, a qualified person approved by the county committee. The row crops must be followed in the fall of 1947 by winter cover crops, drilled or disced in on the contour in order to qualify such land for payment.

In planning for contouring of row crops, all natural drainage ways in the field should be left in sod or seeded to grass mixtures to establish protection from erosion.

Contour farming of row crops, such as corn, conserves moisture, etc.

Well-constructed terraces help conserve valuable top soil and moisture.

12. **Terracing.**—Constructing standard terrace—**$1 per 100 linear feet.**

Specifications.—The terrace system to be laid out and terraces constructed under the general supervision of a qualified person recommended by the county committee and approved by the State committee, and must conform to engineering recommendations as approved by the State committee. Proper outlets to be provided and protected.

a. Where terraces should be constructed.—(1) On cropland with slopes of more than 3 percent, but not to exceed an average of 12 percent (12 feet of fall per 100 feet of horizontal distance). (2) On old meadow or pasture lands, to control erosion while grasses are being reestablished. (3) In all cases the slope of the land should be reasonably uniform and the soil at least 2 feet deep. Irregular or rough land with large gullies or frequent rock outcrops is impractical to terrace.

b. Outlets.—(1) Use well-sodded, natural draws, if possible. (2) If well-sodded natural draws are not available, suitable outlets should be constructed and good sod established in them before constructing the terrace.

c. Construction.—(1) *Spacing of terraces.*—According to the slope of the land, terraces should be spaced as shown in the table below:

Spacing of terraces for Kentucky conditions

Slope (feet per 100 feet)	Vertical drop between terraces		Horizontal spacing (feet)	Linear feet per acre
	Feet	Inches		
3	3	0	100	435
4	3	6	87	495
5	4	0	80	545
6	5	5	72	600
7	4	8	66	650
8	5	0	62	700
9	5	3	60	750
10	5	6	55	790
11	5	9	52	835
12	6	0	50	875

For eroded fields, the vertical drop should be reduced by 6 inches. On porous soils, spacing may be increased by 10 percent and, in certain cases, in excess of 10 percent if previously approved by county committee, acting upon the advice of an experienced erosion engineer.

(2) *Length of terraces.*—Terraces should not exceed 800 feet in length.

(3) *Channel grades.*—Grades in terrace channels should be as shown in the following table:

Fall in inches per 100 feet for variable grade terraces

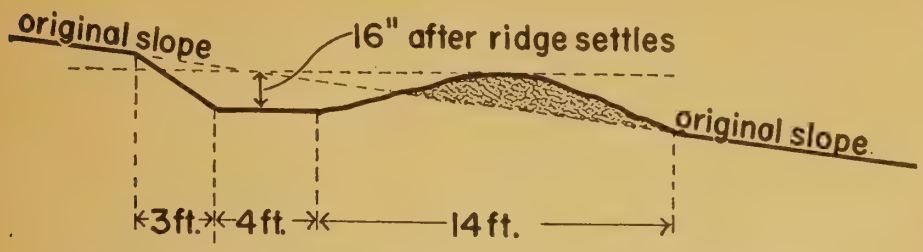
Length of terrace (feet)	*Maximum fall per 100 feet (inches)*
0 [1]–300	2
300–600	4
600–900	5
900–1,200	6

[1] At high point in terrace line.

(4) *Cross section.*—The cross section of each terrace should meet the minimum dimensions shown in the sketch near top of p. 9 and the cross section of the terraces above the normal ground level must be at least 6 square feet.

(5) *Fills.*—Depressions or old gullies to be crossed by terraces should be filled in before building the terraces. Then the terrace ridges should be built up 25 percent higher to allow for settling in these places.

(6) *Cultivation.*—All tillage operations beginning with plowing must be on the contour or parallel to the terraces. Terracing is purely an erosion-control practice. Good agronomy practices, including approved crop rotation, lime and fertilizer as needed, and winter cover crops must be used along with terraces to secure best results.



13. **Diversion ditches.**—Constructing standard diversion ditches—**8 cents per cubic yard** of soil moved.

Specifications.—Each diversion ditch must be laid out and constructed under the general supervision of a qualified person recommended by the county committee and approved by the State committee in accordance with the detailed specifications.

Two types of diversion ditches are provided for under this practice: (1) Hillside diversion ditches which are designed to reduce run-off and erosion on land too steep to terrace, on which the slope ranges from 12 to 20 percent. These ditches should never be substituted for terraces on land suited to terracing. (2) Diversion ditches used between noncropland and cropland to protect the cropland from run-off water or seepage from adjacent upland woods, pasture, or meadow. The design of these ditches is strictly an engineering problem.

The detailed specifications to be met before payment is approved for the practice are listed below for each of these types of ditch:

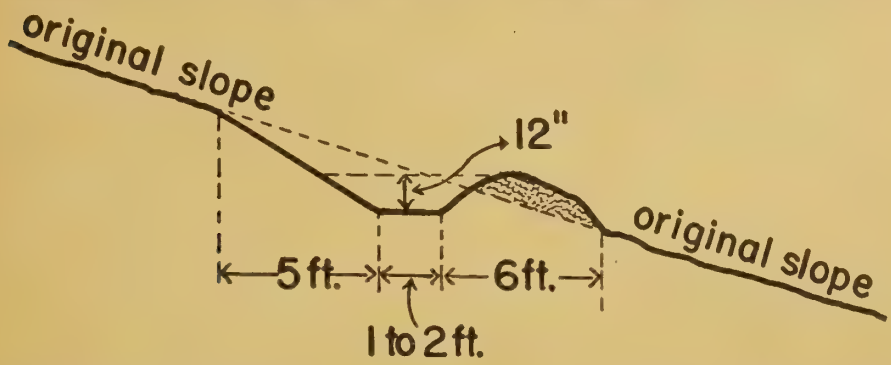
Hillside diversion ditches

a. Location.—These ditches should be planned to allow movement of farm machinery from the lower sides of fields to ridge tops without crossing the ditches. This may be done by leaving a roadway at one end of the field or by providing an outlet at each end of the field and leaving a roadway in the middle of the field.

b. Spacing.—In laying out hillside diversion ditches, the first one should be staked out not more than 75 feet from the ridge top. Additional ditches should be at 60-foot intervals.

c. Grade.—Channel grades may be from 1 to 1½ percent, depending upon the nature of the subsoil. Heavy or rocky subsoils will stand the 1½-percent grade without undue scouring. In lighter subsoils that scour or wash easily, the channel grade should not exceed 1 percent.

d. Dimensions.—The channel should not carry water more than 600 feet. The cross section of the ditch should conform to measurements in the sketch below:



e. Sod strip.—To protect the ditch from excessive silting, a strip of sod 10 feet wide should be left undisturbed or, if the land is not in grass, such a strip

should be seeded immediately above the channel. The back slope, channel. and ridge should also be maintained in a mixture of pasture grasses and never disturbed except as necessary in maintaining the ditch.

Diversion ditches between cropland and noncropland

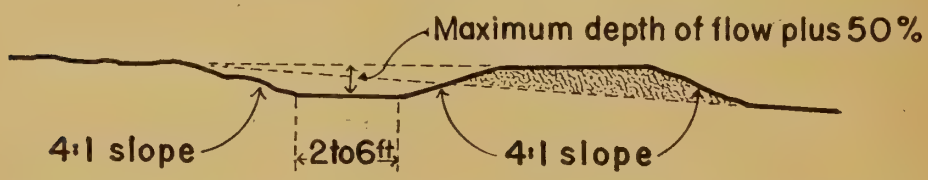
a. Channel capacity.—The capacity of the diversion ditch channel must be sufficient to carry the run-off from the area of upland draining into it. For upland acreages up to 50 acres, the size of channel and gradient may be taken from the following table:

Approximate acreage various graded diversion ditches will drain (applies only to acreage of woodland or pasture above ditch)

Ditch grade per 100 feet	2-foot bottom width, depth of flow		4-foot bottom width, depth of flow		6-foot bottom width, depth of flow	
	12 inches	18 inches	12 inches	18 inches	12 inches	18 inches
6-inch	2	9	5	15	8	20
9-inch	4	14	7	20	10	30
12-inch	5	16	8	25	12	40
18-inch	7	20	10	40	14	50

For larger acreages, channel capacities should be calculated by a competent engineer.

b. Dimensions.—The cross section of the ditch should be similar in shape to that of a terrace, as illustrated in the sketch below:



As indicated, the dimensions of the channel and ridge will vary according to the size of diversion ditch needed. Generally, it is preferable to construct ditches with low gradients and shallow flow, which will require wider channels than for ditches with more depth. In all cases, the depth of channel or ridge height should be 50 percent more than the depth of flow expected. For instance, for a 12-inch depth of flow, the vertical measurement from the bottom of the channel to the top of the ridge should be 18 inches.

c. Sod strip.—All diversion ditch channels should be seeded, and, if necessary, limed and fertilized to establish suitable grass mixtures to prevent undue scouring. Channels should be mowed often enough to keep weed growth from obstructing the flow of water.

14. **Sod waterways.**—Establishing permanent sod waterways on cropland—**75 cents per 1,000 square feet.**

Specifications.—Waterways should be established, wherever possible, in existing natural draws or depressions and must extend to protected outlets. The waterway should have sufficient width to carry the maximum run-off from the area drained and should be at least 10 feet wide at the narrowest point, with edges sufficiently irregular to prevent edge erosion. The seedbed should be well prepared and a sufficient quantity of adapted legume and grass seed sown to assure a good stand. A close-growing type of mixed grasses and legumes such as bluegrass, timothy, red top, Bermuda grass, lespedeza, white or alsike clover, should be sown and a sufficient growth obtained to protect the soil from erosion. The application of 1,000 pounds of complete fertilizer or 10 tons of stable manure per acre is recommended. Seedings made under this practice will not qualify for payment in connection with any other practice. Payment will be made only for sod waterways established during 1947.

15. **Open ditch drainage.**—Constructing or enlarging drainage ditches (including lateral or lead ditches) for which proper outlets are provided—**8 cents per cubic yard of soil moved.**

Specifications.—Ditches must be laid out under the general supervision of a qualified person recommended by the county committee, approved by the State committee, and completed in accordance with the detailed specifications. Payment will not be made with respect to the soil removed unless the amount removed results in the construction of a ditch adequate to provide proper surface drainage. No credit will be allowed for the removal of soil from that portion of any farm ditch which is wholly or partially maintained by any Federal, State, or county appropriation. No credit will be allowed for cleaning out a ditch.

a. The gradient of the ditch, as expressed in feet per 100 feet, shall not be decreased from one section of the ditch to another.

b. Side slopes of the ditch shall not be less than one to one, or 1 foot of horizontal distance to 1 foot of vertical distance.

c. Ditches established to remove water from or across bottom land shall be so located as not to be filled or partially filled by silt carried to the ditch by water flowing directly to the ditch from hill land.

d. The ditch must have adequate capacity to remove the normal excess surface water collected on the area to be drained.

e. Protected outlets must be provided.

16. **Tile drainage.**—Installing drain tile on farmland suitable for cultivated crops or improved meadows—**3 cents per linear foot.**

Specifications.—The drainage system must be laid out and constructed under the general supervision of a qualified person recommended by the county committee, approved by the State committee, and completed in accordance with the detailed specifications.

Tile drainage should be planned to provide adequate drainage of the land involved.

a. Location of drains.—The location of tile drains is controlled generally by the location of the outlet and the topography of the land to be drained. Rolling land may sometimes be drained by laying random lines of tile where the soil is too wet for profitable cultivation. Such drains should be in the course of the natural flow. Level areas of considerable size require a survey by a drainage engineer.

b. Grades.—The grades for tile lines should be established with a level.

c. Size of tile.—Minimum size of the tile—4 inches.

d. Capacity of tile mains.—The size of tile for mains should be not less than those indicated in the table below:

Areas in acres drained by the mains[1] (*⅜-inch run-off per 24 hours*)

Size of tile in inches	Fall in inches per 100 feet									
	1 3/16	2⅜	3⅝	4 3/16	6	7 3/16	9	12	24	36
4	4	6	8	9	10	11	13	15	20	25
5	8	12	15	17	18	20	23	26	37	45
6	13	19	23	27	30	33	36	43	61	73
7	21	29	36	42	53	58	58	66	94	115
8	29	41	51	59	66	71	80	92	130	160
10	53	75	71	105	118	130	145	170	235	290
12	85	120	147	176	191	205	235	270	385	470

[1] For level land—no surface water.

e. Depth.—(1) Minimum average depth of the lines should be 2½ feet and at no point less than 1½ feet below the ground surface. (2) Tile laid to drain seeps or wet weather springs should intercept the water at least 18 inches below the ground surface.

f. Outlets.—(1) Outlet tile ends should be protected from erosion damage by concrete head walls or other means. (2) Outlet tile should be screened

to prevent entrance into them by muskrats, rabbits, and other small animals. (3) Outlets entering a regularly flowing stream should be located above the normal high-water level of the stream.

17. **Forest tree planting.**—Planting approved species of forest trees—**$7.50 per acre.**

Specifications.—The following trees will qualify for payment when planted in accordance with the provisions of the paragraph immediately below:

Black cherry	Red cedar	White ash
Black walnut	Red oak	White oak
Locust	Shortleaf pine	White pine
Cottonwood	Scaley bark hickory	Yellow poplar
Loblolly pine	Sugar maple	Yellow locust

Maximum spacing for black walnut should be 8 x 8 feet; maximum spacings for all other species should be 6 x 6 feet. To qualify for payment, the trees are to be protected from fire and grazing. The trees should be cultivated sufficiently to prevent them from being suppressed by native growth of weeds and undesirable species of shrubs and trees. Plantings of black walnut seedlings must show a survival of not less than 400 trees per acre, evenly distributed over the land, and plantings of all other species must show a survival of not less than 700 trees per acre. In the case of white-pine plantings, credit will not be allowed unless all currant and gooseberry bushes present are removed from the planted area and throughout a surrounding border zone 900 feet wide, to protect the white pine from blister rust damage.

18. **Harvesting seed.**—Harvesting seed from a good stand of alsike clover, biennial white or yellow sweetclover, crimson clover, red clover, white (Dutch) clover, or hairy vetch, sown alone or with a small grain support crop—**$3.50 per acre,** not to exceed 20 acres per farm.

Specifications.—Harvesting must be done in a workmanlike manner and a yield obtained which is reasonable for the community.

19. **Local conservation practice.**—The county committee may select one practice of a local nature not otherwise included in this handbook, which has a definite soil or water conservation value and will meet special needs in the county, provided such practice is approved by the State committee. Any practice selected hereunder must be carried out under specifications and at the rate approved by the State committee, but not to exceed the maximum rate established for a similar type of practice.

Payment to farmers for carrying out such a practice may not exceed 10 percent of the sum of the farm allowances for the county.

U. S. GOVERNMENT PRINTING OFFICE: 1946

ECR-1101. Tenn.

Issued September 30, 1946

TENNESSEE HANDBOOK

OF

CONSERVATION PRACTICES

1947

UNITED STATES DEPARTMENT OF AGRICULTURE
PRODUCTION AND MARKETING ADMINISTRATION
FIELD SERVICE BRANCH

FOREWARD

The stewards of the land, our greatest heritage, are resolved to conserve the soil for future generations, to increase its productivity for the needs of all our people and to enrich it with the vital elements so necessary for life.

The 1947 Agricultural Conservation Program for Tennessee is designed to assist farmers in carrying out soil conserving and soil building practices which will attain these ends.

The practices included in this Handbook are based upon recommendations of Community, County, and State Committeemen, representatives of other agricultural agencies and other farm leaders.

TENNESSEE STATE COMMITTEE

Carl Fry, Chairman
Wm. H. Evans
John M. Goodman
J. W. Ross
C. E. Brehm, Director of Extension Service

TENNESSEE STATE TECHNICAL COMMITTEE

Carl Fry, Field Service Branch
J. V. Webb, Soil Conservation Service
E. C. McReynolds, Extension Agronomist
J. Frank Porter, Farm Bureau Federation
H. W. Wellhausen, Extension Service
Fred T. McFee, TVA
C. O. Ramer, Farm Security Administration
O. E. Van Cleave, Commissioner of Agriculture
J. W. Brimm, Vocational Agriculture

TENNESSEE HANDBOOK OF CONSERVATION PRACTICES--1947

The 1947 Agricultural Conservation Program offers assistance to Tennessee farmers to restore and conserve the fertility of the soil through the use of conservation practices. The program year begins January 1, 1947, and ends December 31, 1947.

In order to encourage the performance of practices which are needed most, the county committee may select from the list of approved practices those which will be applicable to farms in the county.

Each farmer should confer with his county or community committeeman to plan how the program can be of greatest assistance in obtaining the maximum conservation on his farm.

CONSERVATION MATERIALS AND SERVICES

Liming materials, superphosphate, and other designated conservation materials and services may be furnished by the Field Service Branch, Production and Marketing Administration, in lieu of cash payments. The Government will pay part of the cost of the material or service and the farmer will pay part.

PRACTICES AND PAYMENTS

Each State will receive its share of the funds appropriated for 1947 payments to producers who carry out approved conservation practices. The State committee will establish a limit on expenditures for each county. The county committee will determine for each farm, on the basis of conservation needs and farmer's intentions, the extent of assistance that will be made available to each farm for carrying out approved practices. The sum of the amounts approved for all farms in the county may not exceed the limit approved by the State committee. Payments under this program are subject to the appropriation hereafter provided for this purpose by the Congress.

To qualify for payment, each practice must be performed in accordance with approved specifications for the practice and must be in keeping with good farming methods for the locality. The county committee will require evidence (bills, receipts, seed tags, etc.) to be submitted by the farmer in support of reports of practices carried out with materials or seeds, excluding conservation materials furnished by the Field Service Branch, Production and Marketing Administration.

Prior approval by the county committee will be required for all earth moving, construction and pasture practices.

APPLICATION OF MATERIALS

1. LIMING MATERIALS.--Applying standard ground limestone, or equivalent material, to farmland:

Credit rate: Not more than 70 percent of average cost delivered to farms in the county. The rate for other liming material may not exceed 70 percent of average cost or the rate for an equivalent amount of bulk standard ground limestone, whichever is lower. County rates for liming materials will be shown in a supplement to this handbook.

Specifications: To qualify for payment, standard ground limestone shall contain calcium and magnesium carbonates equivalent to not less than 85 percent calcium carbonate and must be fine enough so that not less than 85 percent shall pass through a 10-mesh sieve. Ground limestone not meeting the above specifications will be considered as limestone screenings.

For the purpose of this practice each of the following will be considered to be equivalent to one ton of standard ground limestone:

1,400 pounds of burned or hydrated lime
2,000 pounds of calcium silicate slag furnished by TVA
3,000 pounds of ground limestone screenings.

The applications of liming materials contained in commercial fertilizers will not qualify for payment under this practice.

Liming materials should not be applied to land on which one or more tons per acre has been applied during the past three years unless a recent soil analysis indicates a need for additional materials.

2. PHOSPHATE.--Applying phosphate materials other than rock phosphate to eligible crops:

Credit rate:

a. Normal superphosphate, including phosphate in mixed fertilizers (not more than 25 percent available P_2O_5): 4-1/2 cents per pound of available P_2O_5. This rate is equivalent to $.90 per 100 pounds of 20 percent superphosphate. For purposes of payment, 200 pounds of basic slag will be considered equivalent to 100 pounds of 20 percent superphosphate.

b. Concentrated superphosphate (more than 25 percent available P_2O_5): 4 cents per pound of available P_2O_5. This rate is equivalent to $1.88 per 100 pounds of 47 percent superphosphate.

Specifications: To qualify for payment phosphate materials must be applied as a top dressing to, or in connection with a normal seeding of:

(a) Perennial or biennial legumes such as alfalfa, lespedeza sericea, and red clover;
(b) Perennial grasses such as bluegrass, orchard grass and redtop;
(c) Winter legumes such as crimson clover, vetch, and Austrian winter peas;
(d) Annual ryegrass or annual lespedeza;
(e) A mixture consisting solely of the above crops; or
(f) Permanent pasture.

Phosphate materials may be applied in connection with a normal seeding of the above listed legumes or grasses with a small grain nurse crop.

3. POTASH--Applying potash materials to eligible crops.

Credit rate: 3.6 cents per pound of available K_2O. This rate is equivalent to $1.80 per 100 pounds of 50 percent muriate of potash.

Specifications: Potash must be applied in accordance with the specifications for phosphate materials under practice 2.

4. BORON.--Applying borax to alfalfa.

Credit rate: 4 cents per pound.

Specifications. From 20 to 40 pounds per acre of borax should be applied uniformly to, or in connection with the seeding of alfalfa.

COVER CROPS

5. WINTER COVER CROPS.--Establishing a winter cover crop in the fall of 1947 from seedings of crimson clover, vetch, Austrian winter peas, bur clover, button clover, or annual ryegrass, or a mixture consisting solely of these crops, or a full seeding of one or more of these crops with a small grain nurse crop.

Credit rate: Payment will be made on the pounds of seed (cleaned seed equivalent) used at the following rate per pound:

(a)	Crimson clover	16 cents
(b)	Hairy vetch	15 cents
(c)	Austrian winter peas	5 cents
(d)	Bur clover	32 cents
(e)	Button clover	32 cents
(f)	Ryegrass	9 cents

Specifications: The land must be uniformly covered with a vegetative growth. A well-prepared seedbed; a full seeding of adapted seed; inoculation for legume crops unless a recent crop of the same legume or another requiring the same inoculant has been grown on the land seeded; and the application of liming material, phosphate and potash, where necessary to insure a good stand and good growth, are recommended.

Credit will be allowed for a full seeding of one or more of these crops with a small grain nurse crop. Ryegrass is limited to cropland and orchards. No credit will be allowed under this practice for any acreage on which the county committee determines that a good stand and good growth was not obtained. The seeding rates per acre recommended by the Tennessee Extension Service are as follows:

Crimson clover	20 lbs.	Ryegrass	30 lbs.
Vetch	30 lbs.	Austrian winter peas	45 lbs.
Bur clover	30 lbs.	Button clover	20 lbs.

6. SMALL GRAINS:--Establishing a satisfactory winter cover from seedings of rye, oats, barley, or small grain mixtures, made in the fall of 1946.

Credit rate: $2.00 per acre.

Specifications: A satisfactory cover will be considered to have been established when the land is uniformly covered with a growth from which a reasonable tonnage of forage could be harvested. The crop must not be harvested for grain or cut for hay. No credit will be allowed under this practice for any acreage qualifying under the winter crop practice in the fall of 1946.

PASTURE PRACTICE

7. PASTURE DEVELOPMENT.--Establishing a pasture.

Credit rate: $8.00 per acre.

Specifications: A pasture development and management plan indicating the acreage to be established, preparation of the land, kind and quality of seed to be used, fertilizer and liming materials to be applied in accordance with needs recommended by the soil testing laboratory of the Tennessee Soil Crop Improvement Association or any other approved soil analyst, etc., must be worked out with and approved by the county committee before performing this practice. The pasture management plan shall include also an agreement on the part of the farm operator that any acreage established for credit under this practice will remain in pasture for a period longer than five years. To qualify for payment, a satisfactory stand of adapted perennial grasses, perennial legumes, or a combination of such grasses and legumes must be established. A mixture of permanent grasses and legumes recommended by the Extension Service agronomist, should be seeded before October 10, 1947. The acreage of pasture established and reported for credit under this practice will be inspected by a representative of the county committee before payment is approved therefor.

8. KUDZU.--Establishing a satisfactory stand Kudzu.

Credit rate: $5.00 per acre.

Specifications: A satisfactory stand will be considered to have been established when the crowns or seedling show a strong, healthy growth and the number surviving can be expected to uniformly cover the area within a reasonable length of time. Strong, healthy crowns or seedlings should be planted 3½ feet apart in rows not more than 25 feet apart. This spacing requires approximately 500 plants per acre. Planting should begin from first to 30th of April depending upon the frost date and be completed before active growth begins. There should be a survival of at least 350 plants per acre. Where kudzu is planted along gullies, plants should be set 3½ feet apart on well-prepared, firm soil about 6 feet from the bank of the gully. In determining the acreage of kudzu where it is planted only in rows along gullies or on terrace ridges, each row will be considered to occupy a strip 25 feet wide. In all cases the kudzu plants should be properly fertilized.

9. BERMUDA.--Establishing a satisfactory stand of Bermuda grass by use of sprigs or sod.

Credit rate: $5.00 per acre.

Specifications: Sprigs of Bermuda grass should be planted not more than three feet apart each way and fertilized properly. A sod will not be considered to be established unless at least two-thirds of the plants show healthy growth.

10. STOCKWATER DEVELOPMENT.--Excavating ponds or constructing water impounding dams for providing adequate supplies of water for livestock.

Credit rate: 10 cents per cubic yard of dirt moved, not to exceed 2,500 cubic yards per farm.

Specifications: The work must be done under the general supervision of a qualified person recommended by the county committee and approved by the State committee and must be completed in accordance with detailed specifications approved by the State committee. Adequate spillways must be provided and the watershed area draining into such pond or dam must be protected from erosion as recommended by the person giving technical assistance. This practice will not be approved on permanently running streams.

EROSION CONTROL

11. TERRACING.--Constructing standard terraces for which proper outlets are provided.

Credit rate: $1.00 per 100 linear feet.

Specifications: The terraces must be laid out by a person approved by the county committee and constructed in accordance with detailed specifications and conform to engineering recommendations approved by the State committee. Proper outlets must be provided and protected. A minimum water-carrying capacity of eight square feet cross-sectional area is required for settled terraces.

12. SERICEA.--Establishing a satisfactory stand of lespedeza sericea for the prevention of water erosion.

Credit rate: $6.00 per acre.

Specifications: This practice is intended primarily to control erosion and is limited to fields subject to serious soil erosion and which should be in permanent vegetation. A sufficiently well-distributed stand must be obtained to assure complete coverage of the area the following year. Liming and fertilizer material should be applied where necessary to assure a good stand and growth. A protective vegetative cover must be established.

13. SOD WATERWAYS.--Establishing permanent sod waterways.

Credit rate: 25 cents per 1,000 square feet.

Specifications: Waterways shall, where possible, be located in existing natural draws or depressions, shall extend to level ground or adequate outlets, and shall have sufficient width to carry maximum run-off from the areas drained and to facilitate mowing. Adequate vegetative growth must be established as follows:

(a) On badly gullied waterways, or if it has excessive fall, only kudzu or Bermuda grass will be approved. If kudsu is used, there must be a survival of not less than 750 plants per acre. If Bermuda grass is used, there must be not less than one sod piece or sprig to each 2 square feet of land.

(b) On gentle unbroken slopes, lespedeza sericea may be used. Not less than 40 pounds of scarified seed per acre must be seeded between March 15 and July 1.

A satisfactory cover must be obtained. A satisfactory cover will be deemed to have been established when the land is uniformly covered with a good growth. One hundred to three hundred pounds per acre of nitrate of soda (or its equivalent) is recommended.

The vegetative cover established under this practice will not qualify for payment in connection with any other practice. Payment will be made only for sod waterways established during 1947.

14. CONTOURING ROW CROPS. --Contour farming of row crops.

Credit rate: 50 cents per acre.

Specifications: Payment for this practice will be limited to the acreage on which plantings are made in conformity with contour lines established by or under the supervision of a qualified person recommended by the county committee and approved by the State committee. Planting and cultivating operations must be carried out on the contour.

OTHER PRACTICES

15. OPEN DITCH DRAINAGE.--Constructing drainage ditches for farmland (including lateral and lead ditches) for which proper outlets are provided.

Credit rate: 8 cents per cubic yard of dirt moved.

Specifications: The ditches must be laid out under the general supervision of a qualified person approved by the State committee and must be completed in accordance with detailed specifications approved by the State committee. Payment will not be made with respect to the dirt removed from any ditch unless adequate provision is made for the entrance of water into and out of the ditch. No payment will be made for cleaning out existing ditches.

16. SUBSOILING.--Subsoiling in the counties of: Anderson, Blount, Bradley, Campbell, Greene, Hamblen, Hamilton, Hancock, Hawkins, Jefferson, Knox, Loudon, Meigs, McMinn, Monroe, Morgan, Polk, Roane, Sevier, and Sullivan.

Credit rate: $2.00 per acre.

Specifications: Furrows must be not more than three feet apart and must reach a minimum depth of 15 inches. Credit will not be allowed unless the subsoiling is of sufficient depth to shatter the hardpan.

17. FOREST TREE PLANTING--Planting approved species of forest trees.

Credit rate: $7.50 per acre.

Specifications: The following trees will qualify for payment when planted in accordance with the provisions of the paragraph immediately below:

Yellow poplar	Loblolly pine	Virginia pine	Black walnut
Black locust	Shortleaf pine	White pine	Catalpa

Maximum spacing for black walnut should be eight by eight feet; maximum spacings for all other species should be six and one-half by six and one-half feet. To qualify for payment, the trees must be protected from fire and grazing. The trees should be cultivated sufficiently to prevent them from being suppressed by native growth of weeds and undesirable species of shrubs and trees. Plantings of black walnut seedlings must show a survival in the fall of 1947 of not less than 400 trees per acre evenly distributed over the land and for all other species not less than 700 trees per acre. In the case of white pine plantings, credit will not be allowed unless all currant and gooseberry bushes present are removed from the planted area and throughout a surrounding border zone 900 feet wide to protect the white pine from blister rust damage.

18. HARVESTING SEEDS.--The total payment for the farm for harvesting seeds under a and b below shall not exceed $35.00

(a) Harvesting seed from a good stand of white clover, annual ryegrass, alsike clover, red clover, or alfalfa sown alone or hairy vetch with a small grain support crop.

Credit rate $3.50 per acre.

Specifications: The harvesting must be done in a workmanlike manner and a yield obtained which is reasonable for the community.

(b) Harvesting seed from a good stand of crimson clover grown alone or in connection with a small grain nurse crop.

Credit rate. 1 cent per pound, not to exceed $3.50 per acre.

Specifications: To qualify for payment the seed must be cleaned. Payment will be based on the pounds of clean seed harvested.

19. LOCAL CONSERVATION PRACTICE.--The county committee may select with the prior approval of the State committee, one practice of local nature not included in the State Handbook which has a definite soil or water conservation value and will meet special needs in the county. Any practice selected hereunder must be carried out under specifications approved by the State committee.

Rate of payment: The rate recommended by the county committee and approved by the State committee. The rate should not exceed that percentage of the cost specified as the maximum for practices of a similar type. (Not more than 10 percent of the county's original allocation of funds plus 10 percent of any supplemental allocation of funds may be used for this practice.)